

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application for:

Xiaochun Nie, et al.

Serial No.: 10/716,316

Filing Date: 11/17/2003

For: METHOD OF IMPLEMENTING IMPROVED
RATE CONTROL FOR A MULTIMEDIA
COMPRESSION AND ENCODING SYSTEM

Examiner: David N Werner

Group Art Unit: 2621

REMARKS FOR PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner for Patents

P.O. Box 1450

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Sir:

In response to the Office Action dated 1/11/08 and the Advisory Action dated 4/8/2008, please consider the followings remarks.

10 **I. Claims 1-4 and 8-11**

The Office Action, rejected claims 1 and 2 under §102(a) as being anticipated by Noh. The Office Action also rejected claims 3-4 under §103(a) as being unpatentable over Noh. Claims 2-4 are directly or indirectly dependent on claim 1 and claims 9-11 are directly or indirectly dependent on claim 8. Since the Office Action uses the same grounds of rejection for
15 claims 8-11 and 1-4, Appellants' arguments for claim 1 are also applicable to claim 8. Claim 1 recites a method of scaling digital video information. The method accepts a scaling relaxation value. The scaling relaxation value specifies an amount to relax a scaling performed to prevent buffer underflow or overflow. The method adjusts a scaling value with the scaling relaxation value. The method encodes the digital video information by utilizing the adjusted scaling value.

20 Applicants respectfully submit that Noh does not anticipate claim 1 for at least the following reasons. *First*, Noh does not disclose, teach, or even suggest an encoding method that accepts a scaling relaxation value where the scaling relaxation value specifies an amount to relax a scaling performed to prevent buffer underflow or overflow. The Office Action cites Figure 1 and column 3, lines 3-12 of Noh for disclosing a variable bit rate (VBR) encoder that stores
25 images in storage unit labeled 90 through buffer labeled 80. *See*, page 5 of the Office Action.

The Office Action also cites column 9, lines 1-7 of Noh for disclosing that: “[t]o adjust a variation in the quantization factor, it is important to check the level of a buffer to see if the overflow occurs in the buffer. For instance, if the level of the buffer reaches above a predetermined level, overflow may occur in the buffer. In this case, the present quantization factor is adjusted to be higher in a range of the maximum variation than the previous quantization factor.” Applicants respectfully submit that the cited paragraphs and Figure of Noh disclose adjusting variation in the quantization factor based on the level of the buffer but they do not disclose a relaxation value to relax such adjusting.

Accordingly, Noh does not disclose, teach, or even suggest an encoding method that accepts a scaling relaxation value where the scaling relaxation value specifies an amount to relax a scaling performed to prevent buffer underflow or overflow.

Second, Noh does not disclose, teach, or even suggest an encoding method that adjusts a scaling value with a scaling relaxation value. The Office Action cites column 8, lines 4-60 and column 9, lines 1-7 of Noh and states that the deviation parameter D disclosed in Noh determines the variation of quantization adjustment parameter K, which in turn allows for variation in the quantization factor. The variation of the quantization factor, in turn, is driven at least to prevent buffer overflow and underflow. *See*, page 9 of the Office Action. Applicants respectfully submit that in order to make claim 1 unpatentable, the Examiner has a prima facie obligation to show that Noh discloses an encoding method that adjusts a scaling value with a scaling relaxation value. “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). None of the paragraphs cited and the text recited in the Office Action points to such a disclosure in the cited reference. Accordingly, Applicants respectfully submit that the Examiner has failed to identify how the limitations of claim 1 are disclosed or made unpatentable by Noh.

In view of the foregoing remarks, Applicants respectfully submit that Noh does not anticipate claim 1. As claims 2-4 are dependent on claim 1, Applicants respectfully submit that claims 2-4 are patentable over Noh for at least the reasons that were discussed above for claim 1. Furthermore, Appellants respectfully submit that claims 8-11 are also patentable for at least the same reasons as claims 1-4. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 1-4 and 8-11.

II. Claims 5-7 and 12-14

The Office Action rejected claims 5-7 under §102(b) as being anticipated by Chiang. The Office Action also rejected claims 12-14 under §102(b) as being anticipated by Chiang. Claims 6-7 are dependent on claim 5 and claims 13-14 are dependent on claim 12. Since the Office Action uses the same grounds of rejection for claims 12-14 and 5-7, Appellants' arguments for claim 5 are also applicable to claim 14. Claim 5 recites a method of tracking digital video information complexity. The method determines a complexity measure for a current digital video picture. The method also combines the complexity measure for the current digital video picture to a running average complexity measure for a series of digital video pictures in a manner that prevents the current digital video picture from significant changing of the running average complexity measure for a series of digital video pictures. The method encodes the digital video information by utilizing the running average complexity measure.

Applicants respectfully submit that Chiang does not anticipate claim 5 for at least the following reasons. Chiang does not disclose, teach, or even suggest a method that combines a complexity measure for the current digital video picture to a running average complexity measure for a series of digital video pictures in a manner that prevents the current digital video picture from significant changing of the running average complexity measure for the series of digital video pictures.

The Office Action states that the bit rate R disclosed in Chiang corresponds to the claimed "complexity measure". *See*, page 10 of the Office Action. Applicants respectfully submit that it is well known in the art that a complexity measure quantifies an inherent complexity of a video picture and is not the same as a bit rate. The Office Action further cites column 10, lines 65-67 of Chiang and states that the quantizer scale Q is initially determined as an average of the quantizer scales used to code the macroblocks in the previous picture and this corresponds with the claimed running average complexity measure. Applicants respectfully submit that as correctly quoted by the Examiner, the cited lines of Chiang disclose a quantizer scale that is an average of the quantizer scales to code the macroblocks. The cited lines, however, do not disclose a running average complexity measure as a quantizer scale is different than a complexity measure.

Applicants respectfully submit that none of these alleged features disclosed by Chiang anticipate claim 5. In order to show claim 5 is anticipated, the Examiner has a prima facie

obligation to show that Chiang discloses a method that combines a complexity measure for the current picture to a running average complexity measure for a series of digital video pictures in a manner that prevents the current digital video picture from significant changing of the running average complexity measure for the series of digital video pictures.

5 “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Accordingly, Applicants respectfully submit that the Examiner has failed to identify how the limitations of claim 5 are disclosed in Chiang.

10 In view of the foregoing remarks, Applicants respectfully submit that Chiang does not render claim 5 unpatentable. As claims 6-7 are dependent on claim 5, Applicants respectfully submit that claims 6-7 are patentable over Chiang for at least the reasons that were discussed above for claim 5. Furthermore, Appellants respectfully submit that claims 12-14 are also patentable for at least the same reasons as claims 5-7. In view of the foregoing, Applicants
15 respectfully request reconsideration and withdrawal of the rejections of claims 5-7 and 12-14.

III. Claims 15-16 and 17-18

The Office Action rejected claims 15 under 35 U.S.C. §102 (b) as being anticipated by Noh. The Office Action also rejected claim 16 under §103(a) as being unpatentable over Noh. The Office Action further rejected claim 17 under §102 (b) as being anticipated by Noh. The
20 Office Action further rejected claim 18 under 35 U.S.C. §103(a) as being unpatentable over Noh. Claim 16 is dependent on claim 15. Claim 18 is dependent on claim 17. Since the Office Action uses the same grounds of rejection for claims 17-18 and 15-16, Appellants’ arguments for claim 15 are also applicable to claim 17. Claim 15 recites a method of encoding a sequence of video
25 frames. The method allocates an initial value for a bit budget for a current frame in the sequence of video frames. The method determines an initial value for a scale value based on a percentage of a memory buffer space used. The scale value can scale the bit budget to prevent an underflow or an overflow of the memory buffer. The method determines a relaxation control value to relax the scaling of the bit budget. The method determines a final bit budget for the current frame
30 based on the scale value adjusted with the relaxation control value. The method encodes the current video frame by using the final bit budget.

Applicants respectfully submit that Noh does not anticipate claim 15 for at least the

following reasons. *First*, the Office Action does not state where the Noh disclose a relaxation control value for scaling the bit budget. *Second*, the Office Action does not state where Noh disclose determining a final bit budget for the current frame based on the scale value adjusted with the relaxation control value. Accordingly, the Examiner has not met his prima facie obligation of showing how a §102 reference discloses all limitations of a claimed limitation.

In view of the foregoing, Applicants respectfully submit that Noh does not anticipate claim 15, As claim 16 is dependent on claim 15, Applicants respectfully submit that claim 16 is patentable over Noh for at least the reasons that were discussed above for claim 15. Furthermore, Appellants respectfully submit that claims 17-18 are also patentable for at least the same reasons as claims 15-16. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 15-18.

CONCLUSION

In view of the foregoing, it is submitted that all pending claims, namely claims 1-18 are in condition for allowance. Reconsideration of the rejections and objections is requested.

Allowance is earnestly solicited at the earliest possible date.

Respectfully submitted,

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Dated: May 12, 2008

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